

(19) 世界知的所有權機關
國際事務局



(43) 國際公開日
2003 年 7 月 17 日 (17.07.2003)

PCT

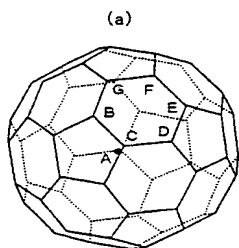
(10) 国際公開番号
WO 03/057624 A1

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|---|-------------------------------|----|--|--|---|
| (51) 国際特許分類 ⁷⁾ : | C01B 31/04 | | | | CORPORATION) [JP/JP]; 〒332-0012 埼玉県 川口市 本町 4 丁目 1 番 8 号 Saitama (JP). 日本電気株式会社 (NEC CORPORATION) [JP/JP]; 〒108-8001 東京都 港区 芝 5 丁目 7 番 1 号 Tokyo (JP). 財団法人産業創造研究所 (INSTITUTE OF RESEARCH AND INNOVATION) [JP/JP]; 〒113-0034 東京都 文京区 湯島 1 丁目 6 番 8 号 Tokyo (JP). |
| (21) 国際出願番号: | PCT/JP02/13304 | | | | |
| (22) 国際出願日: | 2002 年 12 月 19 日 (19.12.2002) | | | | |
| (25) 国際出願の言語: | 日本語 | | | | |
| (26) 国際公開の言語: | 日本語 | | | | |
| (30) 優先権データ:
特願 2002-1848 | 2002 年 1 月 8 日 (08.01.2002) | JP | | | |
| (71) 出願人 (米国を除く全ての指定国について): 科学技術振興事業団 (JAPAN SCIENCE AND TECHNOLOGY | | | | | (72) 発明者; および
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〔続葉有〕

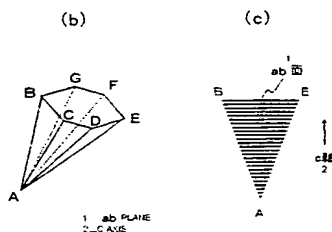
(54) Title: NANO-GRAPHITE SPHERICAL MATERIAL AND METHOD FOR PREPARATION THEREOF

(54) 発明の名称: ナノグラファイト球状体とその製造方法



(57) Abstract: A nano-graphite spherical material which has a structure wherein a plurality of polygonal pyramids of multilayer graphite are arranged without clearance, taking their apexes as a center and the external form thereof is nearly spherical as a whole or as a part; and a method for preparing the nano-graphite spherical material which comprises irradiating a carbon target with a CO₂ laser in an inert gas atmosphere under a pressure of 5 to 10 atm, to thereby generate the carbon in an atomic or cluster form having a temperature of 1000 °C or higher.

(57) 要約:



5 ~ 10 気圧の不活性ガス雰囲気中で、炭素ターゲットに CO_2 レーザーを照射することで、1000℃以上の原子あるいはクラスター状の炭素を発生させることで、複数の多角錐状の多層グラファイトがその頂点を中心にして互いに隙間なく配置された構造を有し、外形が、全体としてもしくは一部として略球形であることを特徴とするナノグラファイト球状体を得る。

ATTACHMENT E



(TAKAHASHI, Kunimitsu) [JP/JP]; 〒278-0051 千葉県 野田市 七光台 3 4 4-1 ファミール野田 5 1 4 Chiba (JP).

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(81) 指定国 (国内): CN, US.

(84) 指定国 (広域): ヨーロッパ特許 (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SK, TR).

添付公開書類:
— 国際調査報告書

2文字コード及び他の略語については、定期発行される各PCTガゼットの巻頭に掲載されている「コードと略語のガイダンスノート」を参照。

INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP02/13304

A. CLASSIFICATION OF SUBJECT MATTER
Int.Cl⁷ C01B31/04

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
Int.Cl⁷ C01B31/02, C01B31/04

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
Jitsuyo Shinan Koho 1926-1996 Toroku Jitsuyo Shinan Koho 1994-2003
Kokai Jitsuyo Shinan Koho 1971-2003 Jitsuyo Shinan Toroku Koho 1996-2003

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
Web of Science, INSPEC, JOIS
[(nano)particle, nanographite, (nano)polyhedron]

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X A	Yahachi SAITO et al., Growth and structure of graphitic tubules and polyhedral particles in arc-discharge, Chem.Phys.Lett., 1993, Vol.204, No.3/4, pages 277 to 282	2-4, 6 1, 5
A	DANIEL UGARTE et al., Curling and closure of graphitic networks under electron-beam irradiation, Nature, 1992, Vol.359, pages 707 to 709	1-6
A	Daisuke KASUYA et al., Formation of C ₆₀ using CO ₂ laser vaporization of graphite at room temperature, Chem.Phys.Lett., 2001, Vol.337, pages 25 to 30	7-14
A	F.KOKAI et al., Emission imaging spectroscopic and shadowgraphic studies on the growth dynamics of graphitic carbon particles synthesized by CO ₂ laser vaporization, J.Phys.Chem.B., 1999, Vol.103, pages 8686 to 8693	7-14

☐ Further documents are listed in the continuation of Box C.☐ See patent family annex.

* Special categories of cited documents:

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"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search
25 March, 2003 (25.03.03)

Date of mailing of the international search report
15 April, 2003 (15.04.03)

Name and mailing address of the ISA/
Japanese Patent Office

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